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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/902,774	07/10/2001	Katsutoshi Takeda	4970/01592	1362

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EXAMINER

MUTSCHLER, BRIAN L

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 06/10/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/902,774

Applicant(s)

TAKEDA ET AL.

Examiner

Brian L. Mutschler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s): ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1 at lines 3 and 5, claims 2-4 at line 2, and in claim 5 at lines 3 and 6, the phrase "plurality of types of solar cell modules" is indefinite because term "type" is not defined. It is not clear what constitutes a "type" of solar cell module. It is suggested that the term "type" be deleted, or the phrase can be changed to "plurality of different size solar cell modules" and changing the remainder of the claim language accordingly.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Younan et al. (U.S. Pat. No. 5,575,861).

Younan et al. disclose photovoltaic system for utilizing the maximum area in the installed location through the use of different sized solar cell modules (col. 6, line 60 to

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col. 7, line 10; fig. 2 and 4A-4C). In figure 2, Younan et al. show a module having seven tabs **32**, each containing a sub-module, or photovoltaic device **36** (col. 5, line 42). In figure 4A, Younan et al. show a module having three tabs **32**, each containing a photovoltaic device **36**. Younan et al. also disclose that “the devices **36** may be interconnected in a series configuration, a parallel configuration or a mixed series-parallel configuration” and “by appropriately configuring the interconnections, current and voltage of the resultant combination may be controlled” (col. 5, lines 58-62).

Regarding claim 2, each device **36** is the same size. (Younan et al. also disclose smaller sub-modules **35**, as shown in fig. 4B and 4C.)

Regarding claims 3 and 4, the voltage is controlled through the use of different wiring configurations (col. 5, lines 58-62).

The method of Younan et al. differs from the instant invention because Younan et al. do not explicitly disclose configuring the different size solar cell modules to yield equal output voltages.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Younan et al. to utilize equal output voltages because Younan et al. disclose a method for controlling the output voltage, and making the output voltages equal by “appropriately configuring the interconnections” would simplify the installation process by making all modules similar.

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5. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Younan et al. (U.S. Pat. No. 5,575,861), as applied to claims 1-4 above, and further in view of admissions of prior art in the instant application.

Younan et al. disclose a method for installing solar cell modules and solar cell modules as recited in the claims 1-4 of the instant invention, as explained above in paragraph 4.

Regarding claim 5, the method of Younan et al. differs from the instant invention because Younan et al. do not disclose the use of a plurality of power generating regions within the solar cell sub-modules.

In the disclosure of the instant application, a conventional solar cell module is disclosed comprised of a plurality of sub-modules **112**, wherein each sub-module **112** contains a plurality of solar cells (p. 3, lines 5-16). Because large solar cells are more difficult to manufacture, it is common in the art to use a plurality of smaller solar cells connected in parallel or series to generate the desired voltage.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Younan et al. to use sub-modules comprised of a plurality of solar cells, or power generating regions, as disclosed prior art in the instant application, because it is well known in the art to use a plurality of small solar cells connected in series or parallel to generate the desired voltage.

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Regarding claim 6, Younan et al. disclose a solar cell module comprising a supporting member **28, 80** upon which a plurality of solar cell sub-modules **36, 82** are arranged (fig. 2 and 16). A wiring member **38** connects the sub-modules **36, 82** to one another (fig. 2 and 16). Younan et al. also disclose the use of an encapsulating member **88** covering the exposed module (col. 10, line 7).

The module of Younan et al. differs from the instant invention because Younan et al. do not disclose the use of a plurality of solar cells within each sub-module.

In the disclosure of the instant application, a conventional solar cell module is disclosed comprised of a plurality of sub-modules **112**, wherein each sub-module **112** contains a plurality of solar cells (p. 3, lines 5-16). Because large solar cells are more difficult to manufacture, it is common in the art to use a plurality of smaller solar cells connected in parallel or series to generate the desired voltage.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Younan et al. to use sub-modules comprised of a plurality of solar cells, or power generating regions, as disclosed prior art in the instant application, because it is well known in the art to use a plurality of small solar cells connected in series or parallel to generate the desired voltage.

Regarding claim 7, Younan et al. disclose a solar cell module comprising a supporting member **28** upon which a plurality of solar cell sub-modules **36** are arranged (fig. 2). A wiring member **38** connects the sub-modules **36** to one another (fig. 2). Younan et al. further disclose that "it may be desirable to dispose the jumpers **38**

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comprising the interconnect system so that they extend further into the overlap portion **30** of the strip **28**, so that they will be covered by adjoining shingles when in use" (col. 5, lines 62-66).

The solar cell module of Younan et al. differs from the instant invention because Younan et al. do not disclose the use of a metal base having a raised portion and a suspended portion, wherein the connection between sub-modules is made between the metal base and the base of the raised portion.

In the instant application, a conventional solar cell module is shown in figures 3 and 4, wherein the module has a metal base **111** having a raised portion **122** with a first engaging portion **121** and a base section **125**, and a suspended portion **124** with a second engaging portion **123** (p. 3, line 5 to p. 4, line 21). This configuration is commonly used in solar cell modules being mounted on roofs because it allows very rapid installation and also enables air to circulate underneath the solar cells and cool the modules.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solar cell module of Younan et al. to use a support member having a metal base with a raised portion and a suspended portion, wherein each have complimentary engaging portions, as disclosed as prior art in the instant application, because it is well known in the art to use a metal base having a raised and suspended portion with engaging members that allow rapid installation and also allow air to circulate and cool the solar cell modules. It also would have been obvious to one having ordinary skill in the art at the time the invention was made to

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have modified the solar cell module of Younan et al. to make the electrical connection between the metal base and the base of the raised portion because Younan et al. teach that "it may be desirable to dispose the jumpers **38** comprising the interconnect system so that they extend further into the overlap portion **30** of the strip **28**, so that they will be covered by adjoining shingles when in use", which would protect the electrical connection from the effects of the weather and sunlight (col. 5, lines 62-66).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following U.S. patents teach the use of a plurality of solar cell/module shapes and sizes to maximize the coverage area.

U.S. Pat. No. 4,089,705 Rubin

U.S. Pat. No. 4,131,123 Della-Vedowa et al.

U.S. Pat. No. 4,321,416 Tennant

U.S. Pat. No. 4,877,460 Flödl

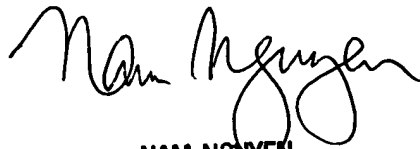
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Mutschler whose telephone number is (703) 305-0180. The examiner can normally be reached on Monday-Friday from 8:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read "Nam Nguyen", with a stylized, cursive script.

NAM NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

blm
June 5, 2002